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# THE JOURNAL OF PHILOSOPHY

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## THE COGNITIVE INTEREST AND ITS REFINEMENTS

IN an earlier paper we have considered belief and purpose as variants of a basic act of "supposition."<sup>1</sup> In the present paper supposition assumes the rôle of hypothesis, or of an act dictated by a specifically cognitive interest.

Although we shall be primarily interested in autonomous thinking, in which thinking has itself become a purpose requiring its own specialized tools, it is important to recognize that thinking is not *necessarily* autonomous. It can be an adjunct of any purpose, when it assumes the form of the consideration of alternatives. It is a form of trial and error in which acts are accepted and rejected in accordance with their meaning rather than their effects.<sup>2</sup> There are, in other words, two types of tentative activity. In one type the auxiliary activities are tried out until one occurs which completes the response; in the second or reflective type the auxiliary activities are only *considered*, until one is adopted. In this second type suppositions occur; that is, the activity is sufficiently aroused to bring its sequel into play, and it is adopted or rejected according to the congruence of this sequel with the checked phase of the determining tendency. In other words only acts which promise relief are overtly performed. Mistakes may be made, and in this case other auxiliary acts must be tried out, so that the organism is learning for the future at the same time that it is guided by the lessons of the past. But the distinguishing feature of this second type of tentative activity lies in the fact that while many acts may be called, few are chosen; or, while many are tried, few are tried out.

Let us now examine the forms assumed by thought when it sets up in business on its own account. Possibly it is always carrying on at least a small independent business. It is not important for our present purposes to determine whether there is or is not an instinct of thought.<sup>3</sup> In any case there is a very early and a very gen-

<sup>1</sup> "The Independent Variability of Purpose and Belief," this JOURNAL, XVIII, 169-80.

<sup>2</sup> Cf. E. C. Tolman, "Instinct and Purpose," *Psychol. Rev.*, 1920, XXVII, 230.

<sup>3</sup> Cf. G. Wallas, *The Great Society*, 1914, Ch. 3.

eral mode of human behavior which we call curiosity. This appears to consist in a determining tendency which moves the organism to acquire anticipatory reactions. It is aroused whenever one encounters boundaries or blank-walls beyond which one can not look. The unopened envelope creates a situation in which one's adaptation does not advance beyond what is immediately presented. In so far as one is curious one would like to anticipate the reactions appropriate to the contents of the letter, that is to be in readiness for developments of stimuli in that direction. This impulse is different from the interest in observing, in which one derives satisfaction from having one's anticipatory expectations successively aroused by an unfolding series of stimuli. Curiosity is satisfied when in the absence of the stimulus one has a response ready; so far as curiosity is concerned one is then quite indifferent to the presentation of the stimulus. Curiosity, in other words, is a tendency to acquire beliefs, or to possess reserves of readiness in all directions; it is to keep in preparation, at least one step ahead of action.

This impulse, be it noted, is satisfied by the possession of beliefs whether true or not. In respect of remote and unrealized contingencies false beliefs may permanently satisfy curiosity. In so far, however, as beliefs mature, in so far as their index is presented, their stability is a function of their truth. Here belief is in part at least founded on experience, so that whenever a belief results in a misplaced response there is begotten at the same time a new and antagonistic belief for the future. Surprise, in other words, tends to prevent its own recurrence. Within certain limits, therefore, if one is to have beliefs at all they must fit the events to which they refer. From this there develops the practise of methodical verification, which is trying out a supposition to the point of determining whether the complementary object is present as indicated, but without carrying the response so far as to alter either the objective situation or one's modes of dealing with it. There is in this the same immunity from consequences which has been remarked in the case of the consideration of alternatives in reflective action. There is a partial or playful exercise of supposition,<sup>4</sup> resulting in this case in the acquirement of tested and stable beliefs.

All forms of purposive activity depend on beliefs for their issue, and in this case it is not merely belief that is required, but true belief. Verified belief is in demand not only because it is stable, but

<sup>4</sup> The whole topic of partial and "unreal" response as characteristic of play, esthetic "detachment," and thought, is one of great importance and wide bearings. Meinong has done much to develop it. For a behavioristic interpretation, cf. L. L. Thurstone: "The Anticipatory Aspect of Consciousness," this JOURNAL, 1919, XVI, 567.

because it is useful. If one's desire is to destroy one's enemy, and believing that he will pass a dark corner at a certain hour of the night, one schedules one's attack accordingly, the belief is useless unless it is true; unless, that is, the complementary stimulus, one's enemy, presents itself when the response, one's blow, is ripe for delivery. Since curiosity is only one of many determining tendencies, and since all determining tendencies require verified beliefs, it is evident that the demand for verified beliefs on the score of their utility far exceeds the demand on the score of their stability. In other words truth is *needed* more than it is *loved*. In either case it is needed or loved for what it is; and truth would be truth if it were neither needed nor loved.

We must now consider certain further refinements which grow out of the demand for verified beliefs. It was asserted above that where the indices of beliefs fall within the range of presented objects a belief's stability is a function of its fitness to events. We have now to observe that this is not invariably the case. There are beliefs which are frequently applied, but without being selectively tested, because the presence or absence of specific conditions does not control the response. Compare, for example, the two following cases. Believing that there is food in the pantry, I go as instructed and either find or do not find something that I can *eat*. The possibility or impossibility of the response is decisive as regards the stability of this belief. But suppose I believe that there is an enemy in the next room. In this case *whatever I find* may serve to excite my suspicion or hate. My belief regarding the attitude of another may thus remain stable independently of my experience. It can find a stimulus in any situation for which my belief may prepare it. "Enemy" meaning whatever I can suspect and hate, there are enemies everywhere. Or conversely, if God means what I can love, then God is everywhere. Similarly to an excessively timid person all things are fearful. Such beliefs are, strictly speaking, true. Their defect lies not in their incorrectness as they stand, but in their promiscuousness. They can satisfy neither curiosity nor the non-intellectual purposes, both of which demand close and specific adaptations to a great variety of particular situations.

It may be objected that if I fear *X* I judge that *X* is disposed to do me injury. But this is not correct. I may fear miscellaneous things, or any new stimulus, without my fear's having any peculiar selective relation to the particular conditions confronting me. The point is that my fear *would* be more useful if it *were* based on such a principle, since it would then be more discriminating. If it were so conditioned, then in the long run it would be reduced to situations of actually imminent injury. Sentimental truths of the indis-

criminate sort, instead of being conditioned by specific beliefs, tend to breed specific beliefs. In case those beliefs refer to remote contingencies, their truth or error remaining indefinitely doubtful, they may be innocuous. But when beliefs so inspired are directed to the immediate environment they are peculiarly likely to be in error because they have originated independently of experience. One expects, for example, what may be expected of a hated person, rather than what has been experienced of this person.

In the technique of knowledge, therefore, it is important that beliefs should so far as possible assume the form of responses uniquely correlated with determinate environmental conditions, as appears to be the case with such responses as sensations, physical adjustments or unambiguous words. Just what sensation is no man can in the present state of human knowledge confidently say. But it does appear to be clear that specific sensations are peculiarly dependent on correlated stimuli. In the emotional sense I can "see red" under any conditions, but in the visual sense the conditions are narrowly prescribed. In physical science it is customary to test hypotheses by the presence of "properties," or by recording mechanisms which respond unambiguously. Words serve the same purpose only in so far as precisely and truthfully used. But the development of language and of the canons of precision and truthfulness testifies to the same demand for uniquely controlled responses.

Words play so important a rôle in the specialization of the cognitive interest, or in the functioning of human reason that Professor Watson may not be far from the truth in maintaining that "the fundamental difference between man and animal . . . lies in the fact that the human being can form habits in the throat."<sup>5</sup> The primary function of language seems to be the establishment within a group, and eventually within the race as a whole, of uniquely determined responses to objects. For man language is both a prerogative and a need. The overt behavior of simpler organisms is less equivocal than that of man and constitutes in itself a sort of language. But the overt responses of men to any given stimulus are, owing to their wide range of ulterior references, almost limitlessly variable. There is scarcely any reaction of which the human organism is capable that a light-stimulus, for example, may not arouse. This variety of response does not, as we have seen, stand in the way of cognition and of truth. For the truth of a supposition does not depend on the nature of the particular response which it applies, but only on the opportuneness of the application. You may love

<sup>5</sup> J. B. Watson, *Behavior*, 1914, 299.

this light while I fear it, but truth depends only on our being ready, you with your love and I with my fear, when the light is there to serve as its object.

But the human variety of response would prevent developed social relations if it were not for the conventions of language. All human association depends on the concerted response of several organisms to the same object. In order that this concerted response may be organized and led by the influence of one individual organism on others, it is necessary that there should be common objects recognized as such. This is possible only when the response of one organism is the sign to a second organism of the presence of a certain object. Language provides such signs. Without language behavior must be either stereotyped or incommunicable. The neural and implicit phases of sensory response, which may be supposed to be uniquely correlated with stimuli, are too obscure to serve as signs. The overt phase of sensory response, the external accommodatory adjustment such as looking, listening or touching, is also uniquely correlated with stimuli and is doubtless employed in the development of language. But this response in its grossly observable aspect is too coarse to distinguish two qualities of the same class, such as two different colors or two different sounds. Language as a social convention establishes identical responses to specific stimuli, and through the limitless variety of its forms provides for a limitless variety of stimuli. Verbal responses have the additional merit of being capable of neutrality as regards favor or disfavor. They may acknowledge their object without prejudice. For this reason they are peculiarly useful in the formulation of belief; and in providing for communication without the use of "influence," or between persons who may entertain opposite sentiments towards the same object. For purposes of knowledge language must be neither eulogistic nor dyslogistic; it must, in other words, have no coloring save such as it derives from the object or stimulus to which it applies.

Through language it is possible to carry out systematically a verification of one individual's judgment by the experience of another. A spoken word, such as "red," becomes a uniform response to the stimulus of red light concomitant with and additional to whatever primary motor-affective response is peculiar to the individual.<sup>6</sup> Once the verbal response has been formed it may occur in the absence of the primary response, and may, like other responses, be implicit or overt. The overt or spoken word also pre-

<sup>6</sup> I do not undertake here to describe the development of language reactions, but only their functions when formed. For a discussion of their origin cf. J. B. Watson, *Behavior*, 1914, Ch. 10.

sents auditory and kinesthetic stimuli to the speaker himself, and auditory, visual and tactual stimuli to other individuals. These stimuli being presented with the original stimulus become "conditioned" stimuli to the primary response. In other words the way it feels when one says "red," the sound of the word "red," the visual or tactual impressions of the moving lips of the man who is saying "red," the visual or tactual impressions of the conventionalized linear forms *r e d*, and possibly the kinesthetic sensations of the writer—all these acquire the power of inducing in any given individual the same mode of behavior as is in him induced by the stimulus of red light.<sup>7</sup> When, then, I hear my neighbor say "red," I bring the appropriate response into play and find myself ready or unready according as the stimulus of red light does or does not appear. In the former case I have confirmed my neighbor's judgment, in the latter case I have at least cast doubt on it. In the comparatively simple example here used the general situation may serve as the index, that is serve to set me looking for red light here and now. In judgments with a remoter reference the process of verification depends entirely upon the unambiguity of the words which constitute the subject, that is their having a unique effect when used to give instructions. Thus in the judgment "fire is red," no verification is possible except in so far as the spoken word "fire" has the effect of influencing the auditor to find just fire and nothing else and to bring his red-response to bear then and there.

It is impossible here to discuss the other uses of language, its flexibility, and its indispensable functions in generalization, discrimination, and constructive speculation. These interesting and important considerations must be set aside lest we lose sight of our main problem, which is to understand the formation of a special cognitive interest. We have so far described the formation of the interest in verification and some of the special agencies which this requires. We have now to consider the interest in consistency, or what would usually be termed the logical interest.

It is evident that in acquiring stable and reliable beliefs it will be necessary to look not only to their truth as heretofore defined, but also to their compatibility with one another. A belief at variance with the same individual's other beliefs can have at best but a precarious existence. In what does this incompatibility consist?

<sup>7</sup> Language in other words may employ any or all of the senses. That which distinguishes it is not its medium but its conventionalized function. I am strongly inclined to believe that internal auditory speech, or "hearing oneself think" must also be recognized and be given an important place in the mental processes. I have not included it because it raises the complicated question of images.

By whatever name we call it we must apparently concede that compatibility and incompatibility are fundamental features of our world.<sup>8</sup> As regards the general conception it must suffice here to point out that compatibility inside the mind and outside the mind mean the same thing. An incompatibility between two responses does not differ in principle from the incompatibility that prevents two bodies from occupying the same space at the same time. The important fact with regard to the incompatibility of responses is this, that it does not appear decisively until the moment when they are brought to bear. They may be compatible in all their implicit phases and incompatible in their explicit phases. In other words the mind can readily entertain contradictory beliefs so long as it does not carry them out; just as it is perfectly possible to schedule two trains as passing at the same time in opposite directions over the same stretch of track so long as the trains are not actually run according to the schedule. It is possible even to run the trains *up to the point of collision*.

In the case of implicit response this compatibility is due in part, perhaps, to the fact that they do not become antagonistic until they innervate skeletal muscles, but more certainly to the fact that they may alternate. It is generally agreed that one may possess in dispositional form two tendencies like anger and appetite for food, which can not be excited simultaneously because they contain opposite activities in the same muscles and glands.<sup>9</sup> They can, however, be excited alternately, and the existence of one as a disposition does not require us to deny the existence of the other. Now consider the case of two beliefs. I believe that my friend will be in New York at three o'clock on Monday afternoon, and also that he

<sup>8</sup> It is, as Professor Holt has long since pointed out (E. B. Holt: *Concept of Consciousness*, 1914), one of the notable characteristics of physical nature. It does not mean the same thing as the absence of co-existence. It means the *impossibility* of co-existence. As such it is not, I believe, the same as the fact of conflict but is rather the source of conflict. Because *A* and *B* can not eat the same bread they contend for the bread; because *C* and *D* can not both occupy the same space they collide. The difficulty of stating contradiction altogether in terms of physical facts lies in its apparently being indescribable without reference to possibility. That the capacity of the hall is incompatible with seating more than five hundred people in it does not mean merely that the number of seats is five hundred, or that (in the case when the seats are filled) all above five hundred are standing, or that a thousand people are vainly struggling to seat themselves; but it means that, given the fact of the hall being as it is, one of the hypotheticals that does not fit it is the seating of five hundred and one or more persons in it. Two train schedules are incompatible when their *projected* and not yet actualized movements bring them to the same point at the same time. Two *tendencies* conflict in the same way.

<sup>9</sup> The whole doctrine of repression can only mean that a tendency can exist in a dormant state although incompatible with the dominant tendency.



will be in Chicago at the same hour of the same day. I may perhaps hold these beliefs simultaneously, provided I do not carry them too far; I can certainly *suppose* them both at the same time by formulating some such verbal statement as, "*X* will be in New York and in Chicago at three o'clock on Monday afternoon." In any case I can believe now one thing and now the other and may possess both beliefs in dispositional form. What then does it mean to say that these beliefs are contradictory? It must mean that they can not both be *completed*. It is impossible that I should be greeting and dealing with *X* as indicated in both beliefs.

We are brought back, of course, to the incompatibility of the physical presence of *X* in two places at the same time, this incompatibility extending to relations between his organism and mine. Or the incompatibility of two beliefs reduces to the fact that they can not both be verified in the sense already defined. They can not both prepare me for contingent experience. It follows that the way incontrovertibly to *demonstrate* the contradictoriness of two beliefs is to carry them out; and that contradictions will be harbored in any given mind in proportion as that mind either habitually fails to carry out its beliefs, or possesses beliefs that can not be carried out because they refer to contingencies which do not normally occur. Thus we get on very comfortably with contradictory beliefs in the field of religion, politics, philosophy, and scientific theory, but find it necessary to eliminate them in our familiar dealings with the immediate physical and social environment.

It is important to observe that while two contradictory suppositions may be entertained as phases of one continuously and rapidly shifting process of thought, this has the effect of preventing either of them from becoming a belief. For belief consists essentially in committal.<sup>10</sup> Two contradictory *beliefs* can occupy the same mind only when there is something like repression and dissociation; when one of them is functionally so unrelated to the other that when the one is called into play the other is not available. A mind which has two contradictory suppositions available in the same situation is in doubt and is equipped to meet two different contingencies. A mind which has two contradictory beliefs, having only one of them available at any given time, is both unresourceful and liable to error. It follows that suppositions with the same index should be kept functionally related so that they may be either corrected and replaced by a true belief, or held jointly in readiness as available alternatives.

Two beliefs are contradictory, then, when they *virtually* con-

<sup>10</sup> Cf. my article "The Independent Variability of Purpose and Belief," this JOURNAL, XVIII, 169-80.

flict, when if carried out they would actually collide with one another. But this contradictoriness is not ordinarily established by allowing the collision to take place. As in the case of railway trains the collision is *avoided* by revising the schedule. In this anticipation of contradiction language is again indispensable. To *X* living and to *X* dead I have two opposed sets of reactions, opposed in the sense that I can not treat *X* both as living and as dead. *X* can not as a matter of fact be both dead and alive; and in so far as my reactions are intimately related to *X* they will share this incompatibility. There are also certain reactions to *X* dead-or-alive. Just as the name "*X*" is substituted for the latter, so the words "living" and "dead" are substituted for the former. It is furthermore a part of the convention of language that what is called "living" shall not also be called "dead," that the terms shall be used as mutually exclusive alternatives. This does not mean that I can not as a matter of physiological fact call *X* both "living" and "dead," but that it is a misuse of terms to do so, in the same sense that it is a misuse of the terms to call him "*Y*." In so far as I know how to use language and am disposed to be veracious I shall call a spade "a spade," and shall abstain from calling it "white" audibly when to myself I call it "black." Furthermore in so far as I have adopted the term "living" for *X* I shall be *unlikely* also to apply the term "dead" to him. These word-habits will undoubtedly acquire physiological incompatibilities, just as the primary reactions will. What we call reasoning from the principle of contradiction does not, however, depend on actually introducing these physiological incompatibilities, but only in presenting the situation in terms of a breach of verbal usage. Suppose, for example, that I entertain the two beliefs, "*Y* is an orphan" and "*Y*'s father is President of the United States," and you point out that I am contradicting myself. You do not mean that I *can not* hold both beliefs, for that is the very condition of mind in which you find me. If I ask you to explain yourself you would say that if *Y* is an orphan his father *X* must be dead; and that if *Y*'s father *X* is President of the United States he must be alive, since if a President dies another individual automatically succeeds to the office; and so you eventually show me that I am calling *X* both "dead" and "alive." You do this by encouraging me to "see the implications" of my two beliefs, that is to elaborate them—carry them out. You substitute for the summary verbal expression of my total reaction, the verbal expressions of some of its constituents, and then you show that two of these are such as "dead" and "alive," applied to the same index. And there you stop. You can not by such reasoning prevent my continuing to believe as before, but you can show what

I am doing. You can show it to me and to others. You can convict me of a violation of the canons of speech, and that will usually suffice to move me to withdraw one or the other of the two statements. If not, you will have done much to discredit any further statements that I may make. Meanwhile the fundamental fact is that if I were to carry out the two beliefs above formulated I should sooner or later find myself in error, or in conflict, or both. You may save me from this. I may devise some relatively innocuous way of trying out the two beliefs; and then, having adopted the one that is verified, reject the other.

As language makes possible the correction of contradictory belief, so it makes possible the *a priori* construction of "consistent" belief. It is to such a construction that the term "hypothesis" is more commonly applied. By combining words and ascribing them when so combined to a specific index I virtually create a determinate expectation. I may, for example, form the hypothesis that "there is a man-eating tiger in the adjoining wood." For most of these words there are equivalent primary and non-verbal responses. Some of the words, like their arrangement, have a purely grammatical function. The several words together with their grammatical structure prescribe a total organized supposition having a specific reference or index. When brought to bear on the indicated occasion it may or may not be verified. But in advance of such verification it may be tested by further elaboration and verbalization in order to discover whether it contains a pair of responses related as "dead" to "alive" or as *a* to not-*a*. If no such pair appears the hypothesis is said to be consistent, though its truth still remains questionable. It is clear that there is a great saving of labor in eliminating contradictory hypotheses in advance of the attempt to verify them.

It should be added that the present account of knowing is in no sense an attempt to reduce the content of logic to mental processes. That much of what is called logic is only bad psychology is doubtless true. But in so far as logic is the study of the fundamental types of relation, it is evident that its subject-matter must be as much presupposed in a psychology of the thought-process as in any other branch of science. The term "logic" being so understood, the structure of all things is "logical," physical nature no less than thought, and bad thinking no less than good. It follows that such problems as contradiction, implication, negation, universality and possibility are not solved, though they may be obscured, by sweeping them into the mind. This procedure appears to provide a solution only so long as the structure of mind itself remains unanalyzed. In proportion as psychology improves in ex-

actness it will become evident that contradictory beliefs, implied conclusions, negative responses, universal ideas and imaginary possibilities are merely special cases of these logical properties, and that their generic nature remains to be determined by a more fundamental analysis.

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### REJOINDER TO MR. BOAS'S ATTACK ON GUTHRIE'S PLOTINUS

IN Vol. XVII, No. 13 (June 17, 1920), of this JOURNAL there appeared a notice of my Plotinus work by George Boas, of the University of California. It was quite a surprise to me, for various reasons. First because the writer was an entire stranger to me, and who therefore could not possibly have had any personal knowledge of me justifying his positive assertions of what I had or had not done, and doubting my word that I had failed to receive any encouragement in my arduous undertaking. Second, because the JOURNAL allowed an attack on my honesty (p. 350, l. 1) and truthfulness (pp. 350, 361), a procedure, to say the least, unusual in a philosophical *entourage*. Third, that the JOURNAL even allowed a notice of anything pertaining to Plotinus when twice in my life (about 1894, when in the Columbia library I wrote my "Philosophy of Plotinus," and about 1914, when I was ready to print my later work) I was rebuffed by authorities still influential in the JOURNAL on the grounds that "nobody was interested in Plotinus."

Besides my surprise, I was in answering the attack hampered by several circumstances. In the first place it is difficult to answer an attack so violent and abusive in a dispassionate and philosophic tone. Second, for over a year and a half, I have been and for the next year I shall still be engaged on my New Testament version which engrosses every spare hour in the night, on weekends, and during vacation, so that I have had to wait six months for even this preliminary self-justification. I therefore have to crave the reader's pardon for both the delay and postponement of a more detailed study of Plotinian hermeneutics. I can not, however, leave Mr. Boas's attack without some preliminary defense.

In the first place I must repeat my assertion that during this life-long effort I received absolutely no encouragement from any university, professor, student, publisher, or dealer, and that I was compelled against all opposition, to spend ten years' high-school teacher's stipend in producing this work in self-defense, and circulating it myself.